

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-74. (canceled)

75. (currently amended) A method of delivering a drug to a subject comprising administering to the subject a therapeutically effective amount of a pharmaceutical composition comprising a therapeutically effective amount of a nucleic acid encoding a chimeric protein comprising (i) a first protein comprising at least 6 contiguous amino acids of the amino acid sequence selected from the group consisting of SEQ ID NO:51 NOS:1-55, said contiguous amino acids being capable of specifically binding to the a gastro-intestinal receptor selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), said first protein being fused via a covalent bond to a second protein being a drug; and a pharmaceutically acceptable carrier.

76-108. (canceled)

109. (currently amended) A method of delivering an active agent in vivo comprising administering to a subject a composition comprising a purified protein which specifically binds the a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is bound to a material comprising an active agent selected from the group consisting of an imaging agent, a drug, and an antigen, said active agent being of value in the treatment of a mammalian disease or disorder, and wherein the purified protein is selected from the group consisting of

(a) — a protein comprising an comprises the amino acid sequence selected from the group consisting of SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least 6 contiguous amino acids that mediates binding to HPT1;

(b) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa1 Thr Xaa2 Xaa3 Ser Xaa4 Xaa5 Xaa6 Asn Xaa7 Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr; Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser; Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;

(c) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254) where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;

(d) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255), where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;

(e) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNR (SEQ ID NO:259);

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGGRSY (SEQ ID NO:262);

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGCCGAHSS (SEQ ID NO:265).

110. (currently amended) The method of claim 109 wherein the purified protein comprises the an amino acid sequence of SEQ ID NO:51 selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

111-116. (canceled)

117. (previously added) The method of claim 109 wherein the material is a particle containing the active agent.

118. (previously added) The method of claim 109 wherein the active agent is a drug.

119. (currently amended) The method as in any one of claims 110 109 and 117-118 wherein the purified protein is not more than 40 amino acids in length.

120. (currently amended) The method as in any one of claims 110 109 and 117-118 wherein the purified protein is not more than 30 amino acids in length.

121. (currently amended) The method as in any one of claims 110 109 and 117-118 wherein the purified protein is not more than 20 amino acids in length.

122. (currently amended) The method as in any one of claims 109, 110 and 117-118 wherein said composition purified protein facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

123. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the administering is oral.

124. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the active agent is a drug.

125. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the subject is human.

126. (previously added) The method of claim 124, in which the subject is human.

127. (currently amended) A method of delivering a drug to a subject comprising administering to the subject a composition comprising a purified protein which specifically binds the a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is covalently bound to a particle containing a drug of value in the treatment of a mammalian disease or disorder, and wherein the purified protein is selected from the group consisting of

(a) — a protein comprising an comprises the amino acid sequence selected from the group consisting of SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least 6 contiguous amino acids that mediates binding to HPT1;

(b) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa1 Thr Xaa2 Xaa3 Ser Xaa4 Xaa5 Xaa6 Asn Xaa7 Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr; Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser; Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;

(c) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254) where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;

(d) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255), where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;

(e) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~STKRSLIYNHR (SEQ ID NO:257);~~

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~STGRKVFNRR (SEQ ID NO:258);~~

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~TNAKHSSHNRR (SEQ ID NO:259);~~

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~DSDVRRPW (SEQ ID NO:260);~~

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~AADQRRGW (SEQ ID NO:261);~~

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~DGRGGRSY (SEQ ID NO:262);~~

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~RVRS~~ (SEQ ID NO:263);

(m) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~SVRSGCGFRGSS (SEQ ID NO:264); and~~

(n) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:  
~~SVRGCCGAHSS (SEQ ID NO:265).~~

128. (currently amended) The method of claim 127 wherein the protein comprises the ~~an~~ amino acid sequence of SEQ ID NO:51 selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

129-134. (canceled)

135. (currently amended) The method as in any one of claims of claim 127  
128-134 wherein the purified protein is not more than 40 amino acids in length.

136. (currently amended) The method as in any one of claims of claim 127  
128-134 wherein the purified protein is not more than 30 amino acids in length.

137. (currently amended) The method as in any one of claims of claim 127  
128-134 wherein the purified protein is not more than 20 amino acids in length.

138. (currently amended) The method as in any one of claims 127-128-134  
wherein said composition purified protein facilitates the transport of the drug through human  
or animal gastro-intestinal tissue.

139. (currently amended) The method as in any one of claims 127-128-134 in  
which the administering is oral.

140. (currently amended) The method as in any one of claims 127-128-134 in  
which the subject is a human.

141. (currently amended) A method of delivering a drug to a subject comprising  
administering to the subject a composition comprising a purified protein which specifically  
binds the a gastro-intestinal tract receptor, which receptor is selected from the group  
consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179),  
and hSI (SEQ ID NO:181), wherein the purified protein is covalently bound to a drug of  
value in the treatment of a mammalian disease or disorder, and wherein the purified protein is  
selected from the group consisting of

(a) — a protein comprising an comprises the amino acid sequence selected  
from the group consisting of SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least  
6 contiguous amino acids that mediates binding to HPT1;

(b) — a protein which is not more than 50 amino acids in length and includes,  
positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa1 Thr  
Xaa2 Xaa3 Ser Xaa4 Xaa5 Xaa6 Asn Xaa7 Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr;  
Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser;  
Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;

(c) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254) where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;

(d) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255), where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;

(e) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGGRSY (SEQ ID NO:262);

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGCCGAHSS (SEQ ID NO:265).

142. (currently amended) The method of claim 141 142 wherein the protein comprises the an amino acid sequence of SEQ ID NO:51 selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

143-148. (canceled)

149. (currently amended) The method of claim 141 as in any one of claims 143-149 wherein the purified protein is not more than 40 amino acids in length.

150. (currently amended) The method of claim 141 as in any one of claims 143-149 wherein the purified protein is not more than 30 amino acids in length.

151. (currently amended) The method of claim 141 as in any one of claims 143-149 wherein the purified protein is not more than 20 amino acids in length.

152. (currently amended) The method as in any one of claims 141-142 143-149 wherein said composition purified protein facilitates the transport of the drug through human or animal gastro-intestinal tissue.

153. (currently amended) The method as in any one of claims 141-142 143-149 in which the administering is oral.

154. (currently amended) The method as in any one of claims 141-142 143-149 in which the subject is a human.

155. (currently amended) The method of claim 75, wherein the first protein comprises at least 10 contiguous amino acids of the an amino acid sequence selected from the group consisting of SEQ ID NO:51 NOS:1-55.